

IN THE CLAIMS

1. (Currently Amended) A control cartridge comprising:
a first member that carries a Hall effect sensor,
a second member that carries a magnet and such that
both the second member and magnet ~~rotates~~ rotate and ~~translates~~
translate with respect to the first member,
means to position the first member with respect to
the second member so that the Hall effect sensor senses a
predetermined magnetic flux density of the magnet,
means to change the magnetic flux density sensed by
the Hall effect sensor ~~in one direction~~ responsive to rotation
of the second member and the magnet with respect to the first
member in a first direction from a predetermined angular
position of said first and second members, and
means to change the magnetic flux density sensed by
the Hall effect sensor ~~in an opposite direction~~ responsive to
translation of the second member with respect to the first
member from said predetermined angular position of said first
and second member as said second member and magnet rotate in an
opposite rotational direction.
2. (Currently Amended) The control cartridge as defined
in claim 1 wherein the magnetic flux density sensed by the Hall
effect sensor is increased responsive to the rotation of the
second member and magnet with respect the first member in the

first direction, and

the magnetic flux density sensed by the Hall effect sensor is decreased responsive to translation of the second member and magnet with respect to the first member from said predetermined angular position.

3. (Currently Amended) The control cartridge as defined in claim 1 including a cam carried by one of the first and second members and a cam follower carried by another of the first and second members, the cam follower moving away from the cam responsive to rotation of the second member with respect to the first member in the a first direction from said predetermined angular position and engaging the cam and translating the another of the first and second members with respect to the one of the first and second members responsive to rotation of the second member with respect to the first member in an opposite direction from said predetermined angular position.

4. (Currently Amended) The control handle as defined in claim 3 wherein the magnetic flux density sensed by the Hall effect sensor is increased responsive to the rotation of the second member with respect the first member in the first direction, and the magnetic flux density sensed by the Hall

effect sensor is decreased responsive to translation of the second member with respect to the first member when rotated in the opposite direction.

5. (Currently Amended) A control cartridge comprising:
a circuit board that includes a Hall effect sensor,
a housing for fixing the position of the Hall effect sensor; the housing having a cam, and
a shaft that carries a magnet and that rotates and translates with respect to the housing; the shaft having a cam follower that engages the cam and translates the shaft with respect to the housing when the shaft is rotated with respect to the housing in one direction from a predetermined angular position but not in an opposite direction from said predetermined angular position.

6. (Currently Amended) A control handle for a vehicle that is steered by a tubular handle bar and that has an engine control device and a cruise control device, the control handle comprising:

a control cartridge disposed in an open end of the tubular handle bar, and

a hand grip rotatably mounted on the exterior of the handle bar adjacent the open end,

the control cartridge including a circuit board upon which a Hall effect sensor is mounted,

a housing receiving the circuit board and fixing the position of the Hall effect sensor; the housing being non-rotatably mounted in the end of a tube and having a cam,

a shaft inside the tube that carries a magnet and that rotates and translates with respect to the housing; the shaft having a cam follower that engages the cam and translates the shaft with respect to the housing when the shaft is rotated with respect to the housing in one direction from a predetermined angular position but not in an opposite direction from said predetermined angular position,

a collar non-rotatably mounted in an opposite end of the tube,

a spring disposed in the tube and biasing the shaft rotationally so that the cam follower engages the cam;

the collar being disposed in the tubular handle bar snugly, and

the shaft having an end that protrudes out of the collar; the end being non-rotatably attached to the hand grip.

7. (Currently Amended) A control cartridge comprising:
a first member that carries a Hall effect sensor,
a second member that carries a magnet and such that
both the second member and magnet rotates rotate and translates

translate with respect to the first member,

a cam carried by one of the first and second members and a cam follower that is carried by another of the first and second members and biased into engagement with the cam to position the first member with respect to the second member so that the Hall effect sensor senses a predetermined magnetic flux density of the magnet,

means to change the magnetic flux density sensed by the Hall effect sensor ~~in one direction~~ responsive to rotation of the second member and magnet with respect to the first member in a first direction from a predetermined angular position, and

means to change the magnetic flux density sensed by the Hall effect sensor in an opposite direction from said predetermined angular position responsive to translation of the second member and magnet with respect to the first member.

8. (Original) The control cartridge as defined in claim 7 wherein the magnetic flux density sensed by the Hall effect sensor is increased responsive to the rotation of the second member with respect the first member in the first direction, and the magnetic flux density sensed by the Hall effect sensor is decreased responsive to translation of the second member with respect to the first member.

9. (Original) The control cartridge as defined in claim 7 wherein the cam follower moves away from the cam responsive to rotation of the second member with respect to the first member in the first direction and translates the another of the first and second members with respect to the one of the first and second members responsive to rotation of the second member with respect to the first member in an opposite direction.

10. (Original) The control cartridge as defined in claim 9 wherein the magnetic flux density sensed by the Hall effect sensor is increased responsive to the rotation of the second member with respect the first member in the first direction, and

the magnetic flux density sensed by the Hall effect sensor is decreased responsive to translation of the second member with respect to the first member.

11. (New) A control cartridge as defined in claim 1 further comprising:

a coil spring biasing said second member toward the predetermined angular position relative to said first member;

said spring undergoing torsion to provide resistance against rotation of said second member in one direction from said predetermined angular position; and

said spring undergoing compression to provide resistance against translation of said second member relative to said first member when said second member is rotated in an opposite direction from said predetermined angular position.

12. (New) A control cartridge as defined in claim 5 further comprising:

a coil spring biasing said shaft toward a predetermined angular position relative to said housing;

said spring undergoing torsion to provide resistance against rotation of said shaft in one direction from said predetermined angular position; and

said spring undergoing compression to provide resistance against translation of said shaft relative to said housing when said shaft is rotated in an opposite direction from said predetermined angular position.

13. (New) A control cartridge as defined in claim 6 further comprising:

said spring being a coil spring biasing said shaft toward the predetermined angular position relative to said housing;

said spring undergoing torsion to provide resistance against rotation of said shaft in one direction from said predetermined angular position; and

said spring undergoing compression to provide resistance against translation of said shaft relative to said housing when

said shaft is rotated in an opposite direction from said predetermined angular position.

14. (New) A control cartridge as defined in claim 7 further comprising:

a coil spring biasing said second member toward the predetermined angular position relative to said first member;

said spring undergoing torsion to provide resistance against rotation of said second member in one direction from said predetermined angular position; and

said spring undergoing compression to provide resistance against translation of said second member relative to said first member when said second member is rotated in an opposite direction from said predetermined angular position.